

LISTING OF CLAIMS

The listing of claims below will replace all prior versions and listings of claims in the application.

Claim 1. (Previously presented) A nucleic acid encoding *Tetrahymena* delta-6-desaturase and comprising at least 8 nucleotides from SEQ ID NO.: 1.

Claim 2 - Cancelled

Claim 3. (Previously presented) A nucleic acid as claimed in claim 1, which is obtained from *Tetrahymena thermophila*.

Claim 4. (Previously presented) A nucleic acid as claimed in claim 1 which is DNA.

Claim 5. (Previously presented) A nucleic acid as claimed in claim 1, which is a DNA having a nucleic acid sequence as depicted in SEQ ID. NO.: 1 from position 33 to position 1091.

Claim 6. (Previously presented) A nucleic acid as claimed in claim 1 comprising one or more noncoding sequences.

Claim 7. (Withdrawn) An isolated nucleic acid comprising at least 8 nucleotides from SEQ ID NO.: 3.

Claim 8. (Previously presented) A vector comprising a nucleic acid comprising SEQ ID NO.: 1 or functional variants thereof having at least 70% sequence identity with SEQ ID NO.: 1.

Claim 9. (Withdrawn) The vector of claim 8, wherein the nucleic acid is functionally combined with a constitutive promoter.

Claim 10. (Previously presented) A process for preparing a nucleic acid comprising SEQ ID NO.: 1 or functional variants thereof having at least 70% sequence identity with SEQ ID NO.: 1, the process comprising chemically synthesizing the nucleic acid comprising SEQ ID NO.: 1 or functional variants thereof having at least 70% sequence identity with SEQ ID NO.: 1.

Claim 11. (Withdrawn) A polypeptide comprising an amino acid sequence comprising at least 6 amino acids from SEQ ID NO.: 2.

Claim 12. (Withdrawn) A process for preparing a polypeptide comprising SEQ ID NO.: 2 or functional variants thereof having at least 70% sequence identity with SEQ ID NO.: 2, the process comprising expressing a nucleic acid comprising SEQ ID NO.: 1 or functional variants thereof having at least 70% sequence identity with SEQ ID NO.: 1 in an expression system.

Claim 13. (Withdrawn) A specific antibody directed against a polypeptide comprising SEQ ID NO.: 2 or functional variants thereof having at least 70% sequence identity with SEQ ID NO.: 2.

Claim 14. (Previously presented) A transgenic, nonhuman organism comprising a nucleic acid comprising SEQ ID NO.: 1 or functional variants thereof having at least 70% sequence identity with SEQ ID NO.: 1.

Claim 15. (Previously presented) The transgenic organism of claim 14 in which the transgenic organism is a plant or a ciliate.

Claim 16 – Cancelled

Claim 17. (Previously presented) The nucleic acid of claim 1 wherein the *Tetrahymena* delta-6-desaturase comprises a polypeptide comprising SEQ ID NO.: 2 or functional variants thereof having at least 70% sequence identity with SEQ ID NO.: 2.

Claim 18. (Previously presented) The nucleic acid of claim 1 comprising functional variants having at least 70% sequence identity with SEQ ID NO.: 1.

Claim 19. (Previously presented) The nucleic acid of claim 4 in which the DNA is double-stranded DNA.

Claim 20. (Previously presented) The vector of claim 8 in which the vector is an expression vector.

Claim 21. (Previously presented) The vector of claim 8 wherein the nucleic acid is functionally combined with an inducible promoter.

Claim 22. (Previously presented) The vector of claim 9 wherein the nucleic acid is functionally combined with an inducible promoter.

Claim 23. (Previously presented) The vector of claim 9 wherein the nucleic acid further comprises

a termination signal.

Claim 24. (Previously presented) The vector of claim 21 wherein the nucleic acid further comprises a termination signal.

Claim 25. (Previously presented) The vector of claim 22 wherein the nucleic acid further comprises a termination signal.

Claim 26. (Previously presented) A process for preparing a nucleic acid comprising SEQ ID NO.: 1 or functional variants thereof having at least 70% sequence identity with SEQ ID NO.: 1, the process comprising isolating the nucleic acid from a gene library using a probe which hybridizes to the nucleic acid.

Claim 27. (Previously presented) The process of claim 20 in which the expression vector is in a host organism.

Claim 28. (Previously presented) A method of enriching delta-6-desaturase dependent fatty acids in ciliates, the method comprising:

inserting a vector comprising a nucleic acid comprising SEQ ID NO.: 1, or functional variants thereof having at least 70% sequence identity with SEQ ID NO.: 1, into a ciliate; and
expressing the nucleic acid to enrich delta-6-desaturase dependent fatty acids in the ciliate.

Claim 29. (Previously presented) The method of claim 28 in which the vector comprises at least one inducible promoter.

Claim 30. (Previously presented) An isolated and purified nucleic acid consisting essentially of SEQ ID NO.: 1 or functional variants thereof.

Claim 31. (Withdrawn) An isolated and purified nucleic acid consisting essentially of SEQ ID NO.: 3 or functional variants thereof.

Claim 32. (Withdrawn) An isolated and purified polypeptide consisting essentially of SEQ ID NO. 2 or functional variants thereof.

Claim 33. (Previously presented) A nucleic acid as claimed in claim 1 which is RNA.

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